Regeln

You have 20 minutes to submit answers. There are 7 questions and a correct answer is always a positive real number i.e. question i has answer $\theta_i \in \mathbb{R}_+$ for $i = 1, 2, \ldots, 7$. Submissions are made in the form of an interval:

$$[\text{Min}_i, \text{Max}_i]$$

Note that both endpoints are included. Each team has 11 guesses hence multiple submissions for questions is possible altough the score, and hence the correctness of the guess, will always be based on the **latest** submission to the question. Submissions can be made throughout the quiz. The team's score is given by the formula:

$$\left(10 + \sum_{i:\text{Min}_i \leq \theta_i \leq \text{Max}_i} \left\lfloor \frac{\text{Max}_i}{\text{Min}_i} \right\rfloor\right) \cdot 2^{7-\#\text{correct guesses}}$$

Where $\lfloor \cdot \rfloor$ is the floor function.

Hence, at the beginning of the quiz all teams have a score of

$(10 + 0) * 2^{7-0} = 1280$

When the time is up, the team with the **lowest** score wins.
When submitting an interval it must clearly state:

- Team
- Question
- Interval.

Using scientific notation is allowed but must follow the conventions of R e.g.:
100 = 1e2
93.000 = 93e3
1.010.000.000 = 101e7
etc.
After submission the team (and everybody else) will be able to see whether the guess is correct or not and if so the value of the answer in the sum i.e. $\lfloor \text{Max}_i/\text{Min}_i \rfloor$ as well as the updated total score.

Fragen

1. Let $\mathbb{1}^i_{(u)}$ be the indicator function of person i being alive at time u.
   Let,
   $$o(x,y) = \int_{\text{1st Jan. 1800}}^{\infty} \mathbb{1}^x_{(u)} \mathbb{1}^y_{(u)} du$$
   with unit of u being days.

   what is
   $$1 + \lfloor o(a,b) \rfloor$$
   for $a =$ Pablo Picasso, $b =$Marshall Bruce Mathers III.

2. The Olympic-class ocean liners were a trio of British ocean liners built by the Harland & Wolff shipyard for the White Star Line during the early 20th century. They were Olympic (1911), Titanic (1912) and Britannic (1914). While Olympic, the lead vessel, had a career spanning 24 years and was retired and sold for scrap in 1935, her sisters would not see similar success: Titanic struck an iceberg and sank on her maiden voyage and Britannic was lost during World War I after hitting a mine off Kea in the Aegean Sea before she could enter passenger service, becoming the largest ship lost in the First World War. How many were killed during the sinking?

3. Number of World backgammon championships being won by danish contestants (including female tournament)

4. Let $DD(x)$ be the number of days lived by person x. Define
   $$\mathcal{D}_I = \min_{x \in I} |DD(x) - 10000|$$
   What is $\mathcal{D}_I$ for
   $I =$ { Lewis Brian Hopkin Jones,
   Johnny Allen Hendrix,
   Janis Lyn Joplin,
   James Douglas Morrison,
   Kurt Donald Cobain }

5. On July 29, 2020, Boeing confirmed that the final 747 would be delivered in 2022 as a result of "current market dynamics and outlook"stemming from the COVID-19 pandemic, according to CEO David Calhoun.The last aircraft, a 747-8F freighter for Atlas Air, rolled off the production line on December 6, 2022. How many Boing 747 have been built in total (including prototypes)?

6. Laser Interferometer Gravitational-Wave Observatory (LIGO) is a large-scale physics experiment and observatory designed to detect cosmic gravitational waves, with observatories in Hanford (Washington) and Livingston (Louisiana). What is the length in meters of the arms of the interferometers detectors?

7. Let $X_i \sim \mathcal{U}(0,1), i = 1, ..., n$ be iid standard uniform stochastic variables. Define

$$I_k = \sum_{i=1}^{k} X_i, \quad 1 \leq k \leq n$$

For k = n = 192, let

$$p = \mathbb{P}\left(I_k < 96 - 2 * 4\right)$$

what is

$$p \cdot 10^4$$